AMENDMENTS TO THE CLAIMS

1. (Original) A method for transmitting a data packet from a mobile node to a correspondent node through a foreign agent while maintaining security therebetween, in a communication system including the mobile node having a unique mobile IP (Internet Protocol) address, the foreign agent wirelessly connected to the mobile node, the foreign agent having a unique IP address, a home agent capable of performing bi-directional wire communication with the foreign agent, the home agent having mapped information of the mobile IP address of the mobile node and the IP address of the foreign agent, and the correspondent node capable of performing bi-directional wire communication with the home agent, the method comprising the steps of:

receiving in the correspondent node the IP address of the foreign agent, mapped with the mobile IP address of the mobile node through the home agent; and

transmitting tunneling indication information indicating whether the correspondent node can decapsulate a data packet encapsulated by the foreign agent, from the correspondent node to the foreign agent having the IP address.

2. (Original) The method as claimed in claim 1, further comprising the steps of:

receiving in the home agent a signal requesting transmission of the IP address of the foreign agent from the correspondent node; and

transmitting the IP address of the foreign agent from the home agent to the correspondent node in response to the signal requesting transmission of the IP address of the foreign agent.

3. (Original) The method as claimed in claim 2, further comprising the step of transmitting the signal requesting transmission of the IP address of the foreign agent wirelessly connected to the mobile node to the home agent, after transmitting a first data packet for communication with the mobile node to the home agent.

4. (Original) The method as claimed in claim 1, further comprising the steps of:

receiving in the foreign agent the tunneling indication information from the correspondent node; and

encapsulating in the foreign agent a data packet received from the mobile node with a tunneling IP header for reverse tunneling and transmitting the encapsulated data packet to the correspondent node, when the tunneling indication information indicates that the correspondent node can perform decapsulation.

5. (Original) The method as claimed in claim 3, further comprising the step of storing information indicating that the tunneling indication information has been transmitted to the foreign agent, in the correspondent node for a predetermined time.

6. (Original) The method as claimed in claim 4, further comprising the step of storing the tunneling indication information received from the correspondent node in the foreign agent for a predetermined time.

7. (Original) A method for transmitting a data packet from a mobile node to a correspondent node through a foreign agent while maintaining security therebetween, in a communication system including the mobile node having a unique mobile IP address, the foreign agent wirelessly connected to the mobile node, the foreign agent having a unique IP address, a home agent capable of performing bi-directional wire communication with the foreign agent, the home agent having mapped information of the mobile IP address of the mobile node and the IP address of the foreign agent, and the correspondent node capable of performing bi-directional wire communication with the home agent, the method comprising the steps of:

transmitting a first data packet for communication with the mobile node from the correspondent node to the home agent;

upon receipt of the first data packet from the home agent, transmitting the first data packet from the foreign agent to the mobile node through a radio channel;

transmitting the IP address of the foreign agent from the home agent to the correspondent node after transmitting the first data packet to the foreign agent;

transmitting tunneling indication information indicating whether the correspondent node can decapsulate a data packet encapsulated by the foreign agent, from the correspondent node to the foreign agent, after receiving the IP address of the foreign agent from the home agent; and

encapsulating in the foreign agent subsequent data packets received from the mobile node with a tunneling IP header for reverse tunneling and transmitting the

encapsulated data packets to the correspondent node, after receiving the tunneling indication information from the correspondent node.

8. (Original) A method for exchanging data packets between a mobile node and a foreign agent while maintaining security therebetween, in a communication system including the mobile node having a unique mobile IP address, the foreign agent wirelessly connected to the mobile node, the foreign agent having a unique IP address, a home agent capable of performing bi-directional wire communication with the foreign agent, the home agent having mapped information of the mobile IP address of the mobile node and the IP address of the foreign agent, and a correspondent node capable of performing bi-directional wire communication with the home agent, the method comprising the steps of:

decapsulating in the foreign agent a data packet received from the correspondent node and transmitting the decapsulated data packet to the mobile node, when the correspondent node transmits a data packet encapsulated with a tunneling IP header for forward tunneling to the foreign agent using the IP address of the foreign agent; and

upon receipt of a packet data for communication with the correspondent node from the mobile node through a radio channel, encapsulating in the foreign agent the received data packet with a tunneling IP header for reverse tunneling, and transmitting the encapsulated data packet to the correspondent node.

9. (Currently Amended) A method for transmitting a data packet from a mobile node to a correspondent node through a foreign agent while maintaining security

therebetween, in a communication system including the mobile node having a unique mobile IP address, the foreign agent wirelessly connected to the mobile node, the foreign agent having a unique IP address, a home agent capable of performing bi-directional wire communication with the foreign agent, the home agent having mapped information of the mobile IP address of the mobile node and the IP address of the foreign agent, and the correspondent node capable of performing bi-directional wire communication with the home agent, the method comprising the steps of:

receiving at the foreign agent a data packet for communication with the correspondent node from the mobile node through a radio channel;

transmitting tunneling indication information indicating whether the correspondent node can decapsulate a data packet encapsulated by the foreign agent, from the correspondent node to the foreign agent having the IP address;

determining in the foreign agent whether the correspondent node can perform reverse tunneling, by consulting the ~~previously stored~~ tunneling indication information;

encapsulating the data packet with a tunneling IP header for reverse tunneling and transmitting the encapsulated data packet to the correspondent node, if the correspondent node can perform reverse tunneling; and

transmitting the data packet to the correspondent node through the home agent, if the correspondent node cannot perform reverse tunneling.

10. (Original) The method as claimed in claim 9, wherein the tunneling indication information is received from the correspondent node to the foreign agent.

11. (Original) The method as claimed in claim 10, wherein the tunneling indication information received from the correspondent node is stored in the foreign agent for a predetermined time.